

# Greening supply chains in South Asia

## Trade-led approach to sustainable transformation

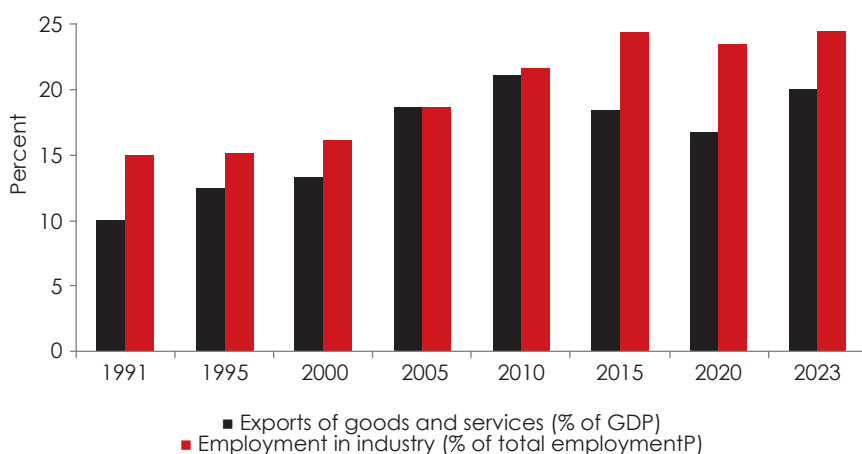
Greening supply chains in South Asia faces challenges of fragmented policy, inefficiency in environmental governance, and vulnerability to operational risks.

Fahmida Khatun and Foqoruiddin Al Kabir



In recent years, green supply chains as an instrument for reducing carbon footprint to combat climate change and promote sustainable development has been gaining traction. As part of the initiatives, responsive stakeholders are increasingly calling for transparency, environmental responsibility, and social accountability across production and distribution networks. As a result, greening supply chains has become a strategic priority for businesses worldwide, influencing trade patterns, investment decisions, and competitiveness. Key regulatory frameworks such as the EU Green Deal, the Corporate Sustainability Due Diligence Directive (CSDDD), and carbon border adjustment mechanisms are also pushing firms to adopt

**Figure 1** Trend of export and employment in industry in South Asia



Source: World Development Indicators (2024).

low-carbon practices, reduce emissions, and ensure ethical sourcing.<sup>1</sup>

Greening the supply chain is crucial for South Asia due to the region's high involvement in international trade exposure, rapid industrialization, and severe environmental degradation. For instance, countries like Bangladesh, India, Pakistan, and Sri Lanka in South Asia have become an integral part of global supply chains, especially for textiles, apparel, and agro-processing industries. At the same time, the region faces critical challenges related to air and water pollution, resource depletion, and rising greenhouse gas emissions stemming from industrial activities. While global markets are increasingly imposing strict environmental compliance and due diligence requirements, failure to ensuring the green supply chains in the region could risk market access, foreign investment, and long-term economic growth.

As global call for sustainable and transparent supply chains intensifies, South Asian countries face challenges that can lead to an opportunity to transform the traditional industrial and trade practices into a sustainable one. Against this backdrop, this article discusses strategy that can support this transition, including regulatory reform, capacity building, and region-

al cooperation to foster more sustainable, competitive, and resilient supply chains.

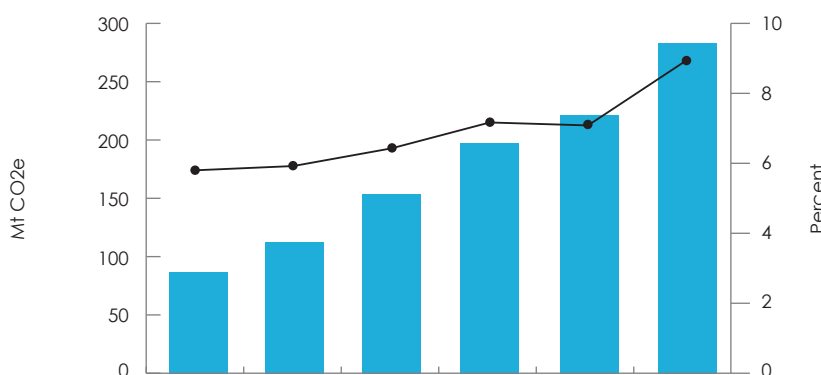
### Greening supply chain matters for South Asia

Exports play a critical role in the economic structure of South Asian countries, contributing significantly to GDP and employment. Over the years, the contribution of export earnings to GDP increased twofold since 1990 (Figure 1). In 2023, the share of exports of goods and services to GDP was 20.01 percent, while it was 13.28

percent in 2000. Similarly, the share of employment in industry increased to 24.55 percent from 16.11 percent in 2000. These numbers indicate that exports play a significant role in the region's growth and employment generation. In Bangladesh, for instance, the ready-made garments (RMG) sector, the country's key exporting sector, accounts for over 80 percent of total exports and contributes nearly 8 percent to GDP,<sup>2</sup> while employing more than 3 million people.<sup>3</sup>

While exports of goods and services are significant for the region's

**Figure 2** CO2 emissions from industrial processes (MtCO2e)



Source: World Development Indicators (2024).

growth, the production and logistics systems of exporting sector in South Asia have a significant environmental footprint, driven by rapid industrialisation, weak regulatory enforcement, and traditional technologies.<sup>4</sup> Manufacturing sector is a major contributor to air and water pollution due to the widespread use of fossil fuels, inefficient resource use, and inadequate waste management. For example, the textile and dyeing industries in Bangladesh, India, and Pakistan discharge large volumes of untreated effluents into water bodies, contributing to severe water contamination and ecosystem degradation.<sup>5</sup> As a result, reducing the environmental footprint in industrial production system and transition to green supply chain will be crucial for the region.

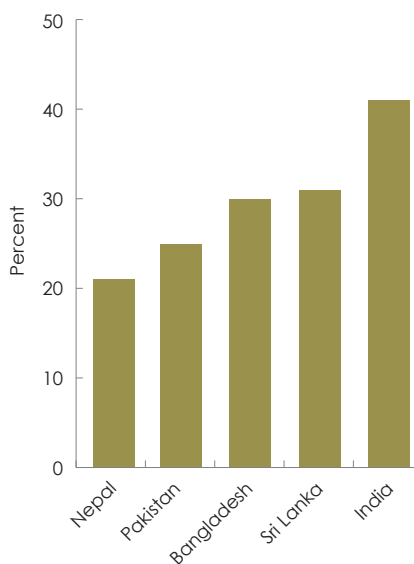
### Mapping the region's supply chain sustainability

The trend of CO<sub>2</sub> emission from industrial processing in South Asia shows a slow increasing trend over the years. The current share of South Asia in global emission from industrial processing is 8.81 percent in 2023 (Figure 2). Although South Asian region is not among the top emitters of industrial processing, a gradual increase of emission is observed over the time. In 2000, the share of South Asia in CO<sub>2</sub> emission from global industrial processing was 5.46 percent which increased to 6.83 percent in 2020. A significant increase of 8.81 percent was observed in 2023.

In terms of industrial energy consumption in South Asian Countries, India ranks top with a share of 41 percent in total final energy consumption, followed by 31 percent for Sri Lanka, and 30 percent for Bangladesh (Figure 3). It indicates that industries in South Asia consume a significant amount of energy for industrial processing which further leaves a CO<sub>2</sub> footprint as fossil fuel continues to dominate the energy mix in the region.

While there is an increasing trend in renewable energy consumption in the World. South Asian region shows a slightly declining trend over the years (Figure 4). The South Asian

**Figure 3** Share of industry in total final energy consumption



Source: International Energy Agency (IEA), (2024).

economy is growing faster than any other region in the world fueled by industrial growth.<sup>6</sup> This growing industries in this region require continuous supply of energy. However, fossil fuel remains the dominant source of energy in the region.<sup>7</sup> As a result, a declining trend is observed over the years in terms of renewable energy consumption.

### Challenges to greening supply chains

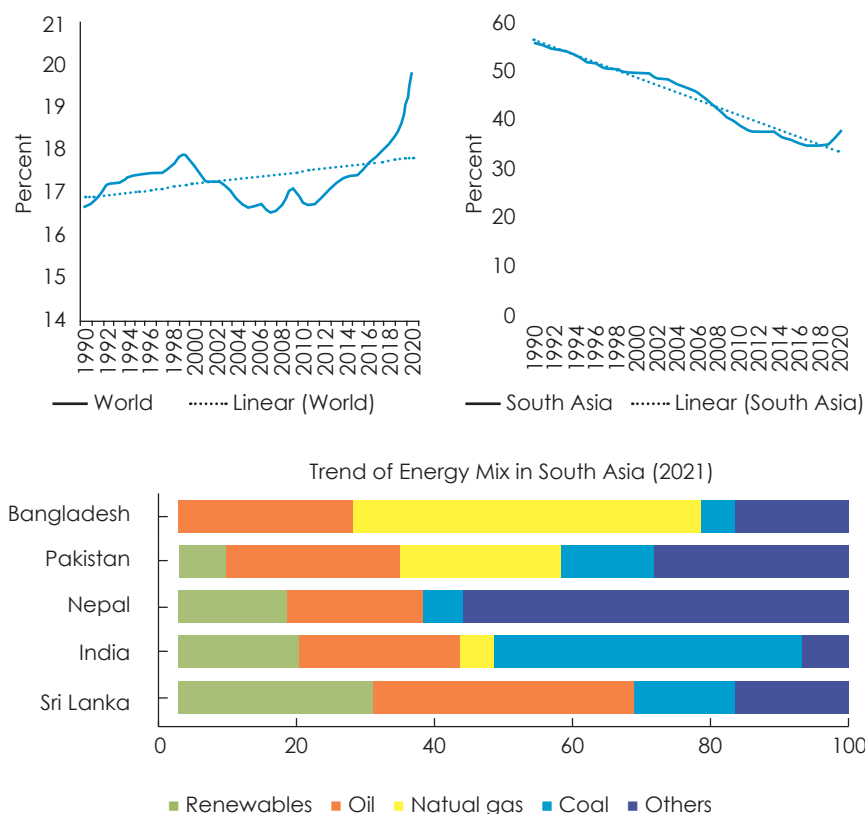
The challenges to greening supply chain in South Asia are in many folds including fragmented policy frameworks, weak enforcement of regulations, low awareness and limited adoption of green practices for Small and Medium Enterprises (SMEs), technological deficit, inadequate green financing, and poor regional coordination.<sup>8</sup> At the national level, responsible government agencies on trade, environment, industry, and transport for ensuring sustainability often operate in institutional silos.<sup>9</sup> As a result, weak enforcement of regulations for ensuring sustainable practices in industrial production are observed across the countries in the region. SMEs are an

integral part of regional supply chain but they lack awareness in adopting green practices due to their limited financial and technological capacity. Technological deficit combined with limited access to green financing, further impedes their ability to adopt environment friendly solutions. At the regional level, the absence of harmonized environmental policies and standards impedes cross-border coordination and weakens collective efforts to green supply chains. Hence, greening supply chains in South Asia is facing challenges of fragmented policy, inefficiency in environmental governance, and vulnerability to environmental and operational risks.

### Pathways to sustainable supply chain

While the South Asian region faces multiple interconnected challenges in greening the supply chain, the transition towards a green supply chain requires policy actions across trade, industry, environment, and financing. For instance, integration of environmental and climate-smart criteria into trade and industrial policy will be a crucial factor for reducing the carbon footprint in industrial processing. In this case, export incentives and tax benefits can be a crucial instrument to prioritise the adoption of resource-efficient and low-emission production processes. The integration of environmental and climate smart criteria into trade and industrial policy would further be strengthened in countries across the region by establishing regional green supply chain standards and certifications. Regional platforms such as South Asia Co-operative Environment Programme (SACEP) and Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) can facilitate the development of harmonized guidelines and certifications on emissions, energy efficiency, packaging, and waste management aligned with global trade standards. The establishment of such standards and certification will also help strengthening institutional capacity at both national and subnational levels for Environmental, Social,

**Figure 4** Renewable energy consumption (% of total final energy consumption) and energy mix in South Asia



Source: International Energy Agency (IEA) 2024.

and Governance (ESG) compliance, sustainable audits, and reporting.

Special attention should be given to SMEs in the supply chain. The targeted support to SMEs will ensure an inclusive green transition in the supply chain in the region. The targeted support may include technical assistance programmes on cleaner production methods, resource efficiency, and ESG compliance, as well as access to affordable green financing through blended finance instruments, credit guarantees, or dedicated green SME funds. Supplier development programmes can also help SMEs integrate into global value chains by meeting environmental standards.

## Conclusion

South Asia stands at a critical juncture where the transition to green supply

chains presents a unique window of opportunity. By embracing sustainable practices, countries in the region can enhance their global competitiveness and build more resilient and future-ready supply networks. However, greening supply chain in South Asia requires a coordinated regional response that harmonises policies, standards, and investment priorities across borders. With the right mix of political will, institutional support, and international cooperation, South Asia can transform its supply chains into green and sustainable one for sustainable growth, climate resilience, and shared prosperity. ■

Dr. Khatun is Executive Director and Mr. Kabir is Senior Research Associate at Centre for Policy Dialogue (CPD).

## Notes

- Butt, J., and F. Kousar. 2024. Driving Sustainable Growth: The Corporate Sustainability Due Diligence Directive as a Catalyst (CSDDD) for Public Administration Reform and Corporate Accountability in the European Green Deal. *Driving Sustainable Growth: The Corporate Sustainability Due Diligence Directive as a Catalyst (CSDDD) for Public Administration Reform and Corporate Accountability in the European Green Deal*, 14(3), 7-25.
- Bangladesh Bank. 2024. *Quarterly Review of Readymade Garments (RMG)*. Dhaka: Bangladesh Bank.
- Mapped in Bangladesh. 2025. Retrieved from Mapped in Bangladesh: <https://mappedinbangladesh.org/>
- Sikder, M., Wang, C., Frederick, K., and J Wood. 2022. Driving Factors of CO2 Emission Reduction in the Logistics Industry: An Assessment of the RCEP and SAARC Economies. *Environment, Development and Sustainability*, 26, 2557-2587.
- Khan, S., Jian, C., Zhang, Y., Golpīra, H., Kumar, A., & Sharif, A. 2019. Environmental, Social and Economic Growth Indicators Spur Logistics Performance: From the Perspective of South Asian Association for Regional Cooperation countries. *Journal of Cleaner Production*, 214, 1011-1023.
- Islam, M., & Mostafa, M. 2018. Textile Dyeing Effluents and Environment Concerns - A Review. *Journal of Environmental Science and Natural Resources*, 11 (1-2), 131-144.
- World Bank Group. 2025. *South Asia*. Retrieved from: <https://www.world-bank.org/en/region/sar/overview#1>
- Ul-Haq, A., Jalal, M., F. Sindi, H., and S. Ahmad. 2020. Energy Scenario in South Asia: Analytical Assessment and Policy Implications. *IEEE Access*, 8, 156190-156207.
- Tseng, M.-L., Islam, M. S., Karia, N., Fauzi, F. A., and S. Afrin. 2019. A literature review on green supply chain management: Trends and future challenges. *Resources, Conservation and Recycling*, 141 (2019), 145-162.
- Rasul, G., and N. Neupane. 2021. Improving Policy Coordination Across the Water, Energy, and Food, Sectors in South Asia: A Framework. *Frontiers in Sustainable Food System*, 5.
- Boström, M., Jönsson, A., Lockie, S., Mol, A., & P. Oosterveer. 2015. Sustainable and Responsible Supply Chain Governance: Challenges and Opportunities. *Journal of Cleaner Production*, 107: 1-7.